

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application. Where claims have been amended and/or canceled, such amendments and/or cancellations are done without prejudice and/or waiver and/or disclaimer, and the right to claim this subject matter in a continuing application is hereby reserved.

1. (Currently Amended) In a digital wireless receiver, a method of detecting the presence of a data packet in a received radio frequency (RF) signal comprising ~~the steps of:~~

- (a) down-converting said RF signal into in-phase (I) and quadrature (Q) baseband signals;
- (b) removing direct current (DC) offsets from said I and Q baseband signals;
- (c) modulating said I and Q baseband signals;
- (d) performing amplitude normalization on said modulated I and Q baseband signals;
- (e) comparing said amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;
- (f) detecting a peak of said complex correlator output; and
- (g) if in response to said peak is being above a predefined threshold,
indicating that a data packet has been received, ~~else performing steps (a) to (g) on a subsequently received RF signal.~~

2. (Currently Amended) The method of claim 1 wherein said ~~step of~~ performing amplitude normalization comprises mapping said modulated I and Q baseband signals to a quantized phase shift keying (PSK) signal constellation.

3. (Currently Amended) The method of claim 2 wherein said ~~step of~~ detecting further comprises:

- (a) converting said complex correlator output from complex to polar value;

- (b) calculating the signal magnitude of said polar value; and
 - (c) determining if a data packet containing information bits is present.
4. (Currently Amended) The method of claim 3 wherein said ~~step of~~ calculating is performed using the formula $(mag)^2$.
5. (Currently Amended) The method of claim 4 wherein ~~the step of~~ said determining comprises employing a peak signal envelope detection technique.
6. (Currently Amended) The method of claim 4 wherein the ~~step of~~ determining comprises comparing the signal magnitude to a minimum threshold and ~~if said signal magnitude exceeds said minimum threshold,~~ indicating that a correct signature was received in response to said signal magnitude exceeding said minimum threshold.
7. (Currently Amended) In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal comprising:
- (a) a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from said received RF signal;
 - (b) an acquisition module communicating with said DC offset module comprising
 - i. a M-ary phase shift keying (PSK) mapper for mapping said I and Q baseband signals to a quantized PSIS signal constellation;
 - ii. a complex correlator receiving input from said M-ary PSK mapper for comparing said mapped I and Q baseband signals to a reference; and
 - iii. a detector receiving input from said complex correlator for determining the presence of a correct signature.
8. (Currently Amended) The circuit of claim 7 wherein the detector comprises:
- i. a complex to polar (C2P) converter for converting the output of said complex correlator into an amplitude and phase value;

- ii. a magnitude calculation module for determining a signal size of said converted output; and
- iii. a peak detection module communicating with said magnitude calculation module for determining the presence of information bits.

9 (Original) The circuit of claim 8 wherein said received RF signal comprises a quadrature amplitude modulated (QAM) signal.

10. (Cancelled) In a wireless digital receiver, a method for detecting the presence of a data packet in a received quadrature amplitude modulated (QAM) radio frequency (RF) signal comprising mapping said QAM RF signal to a quantized phase shift keying (PSK) constellation and processing in a matched complex correlator to detect the presence of a data packet.

11. (Currently Amended) ~~The method of claim 10 further~~ A method for detecting the presence of a data packet in a received quadrature amplitude modulated (QAM) radio frequency (RF) signal, the method comprising the steps of:

mapping said QAM RF signal to a quantized phase shift keying (PSK) constellation by:

~~(a)~~ removing direct current (DC) offsets from I and Q baseband signals derived from said received QAM RF signal;

~~(b)~~ modulating said I and Q baseband signals; and

~~(c)~~ performing amplitude normalization on said modulated I and Q baseband signals; and

processing in a matched complex correlator to detect the presence of a data packet by:

~~(d)~~ comparing said amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;

~~(e)~~ detecting a peak of said complex correlator output; and

(f) if said peak is above a predefined threshold, indicating that a data packet has been received, ~~else performing steps (a) to (f) on a subsequently received QAM RF signal.~~

12. (Currently Amended) The method of claim 11 wherein said ~~step of performing~~ amplitude normalization comprises mapping said modulated I and Q baseband signals to a quantized phase shift keying (PSK) signal constellation.

13. (Currently Amended) The method of claim 12 wherein said ~~step of detecting~~ further comprises:

- (a) converting said complex correlator output from complex to polar value;
- (b) calculating the signal magnitude of said polar value; and
- (c) determining if whether a data packet containing information bits is present.

14. (Currently Amended) The method of claim ~~[[4]]~~ 13 wherein ~~the step of said~~ determining comprises comparing the signal magnitude to a minimum threshold and ~~if said signal magnitude exceeds said minimum threshold, indicating that a correct signature was received~~ in response to said signal magnitude exceeding said minimum threshold.

15. (Currently Amended) In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal, said circuit comprising:

(a) a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from said received RF signal; and

(b) an acquisition module receiving said corrected I and Q baseband signals for performing mapping, comparing and detecting functions in relation thereto to determine ~~the~~ a presence of information bits associated with said data packet.

16. (Currently Amended) The circuit of claim 15 wherein said acquisition ~~block~~ module comprises:

- i. a M-ary phase shift keying (PSK) mapper for mapping said I and Q baseband signals to a quantized PSK signal constellation;
- ii. a complex correlator receiving input from said M-ary PSK mapper for comparing said mapped I and Q baseband signals to a reference; and
- iii. a detector receiving input from said complex correlator for determining ~~the~~ a presence of a correct signature.

17. (Currently Amended) The circuit of claim 16 wherein the detector comprises:

- i. a complex to polar (C2P) converter for converting the output of said complex correlator into an amplitude and phase value;
- ii. a magnitude calculation module for determining a signal size of said converted output; and
- iii. a peak detection module communicating with said magnitude calculation module for determining ~~the~~ a presence of information bits.

18. (Currently Amended) The circuit of claim ~~[[8]]~~ 17 wherein said received RF signal comprises a quadrature amplitude modulated (QAM) signal.